

F. R. FOSBERG*: *Fimbristylis juncea* (Forst. f.) R. & S.
and its relatives**

F. R. フォスバーク*: *Fimbristylis juncea* (Forst. f.) R. & S.
とその近縁種**

Scirpus junceus was very briefly described from the Society Islands by George Forster in his Prodr. p. 6, 1786. It was transferred to *Fimbristylis* by Roemer and Schultes in 1817. Most subsequent references to it have been either mere references to or copies of Forster's treatment, or information supplied by J. Nadeaud, who listed this species as his no. 244, in his enumeration of Tahitian plants. He merely says "Tres frequent en tout les Marais". Nadeaud has been the only one to report this species from Tahiti since Forster's original gathering, specimens of which I have studied in the herbaria at British Museum and Göttingen. I have not located a specimen collected by Nadeaud, if one exists.

During several trips to the Society Islands, we had made a special point of looking for *Fimbristylis juncea*, with no success, whatever. Dr. M. L. Grant, who collected extensively in the Society Islands in 1930-31, apparently did not find this species, either, as there are no records of it among his field cards, which are deposited with me.

Fimbristylis juncea (Forst. f.) R. Br. ex R. & S., Syst. Veg. 2: 102, 1817; Guillemain, Zeph. Tait. 317, 1836; Endlicher, Fl. Suds. 160, 1837; Nadeaud, Enum. Pl. Ind. Ile Tahiti 33, 1873; Butteaud, Fl. Tahitienne 104, 1891; Drake, Ill. Fl. Ins. Maris Pac. 332-333, 1892; Drake, Fl. Poly. Franc. 242, 1892; Blake, Contr. Qld. Herb. 8: 10-12, 1969.

Scirpus junceus Forst. f., Prodr. 6, no. 28, 1786; R. Br., Prodr. 226, 1810.

The combination in *Fimbristylis* is often ascribed to Robert Brown, Prodr. 226, 1810, but, although he clearly considered *Scirpus juncea* to belong to *Fimbristylis*, he did not make the combination. The above references all either quote or copy the meager information given by Forster, 1786, or by Nadeaud, 1873, except that by Blake.

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** Contribution in honor of the late Dr. Hiroshi Hara.

Brief description based on Forster (BM, lectotype): culms densely caespitose, to 35 cm tall, slender, deeply striate; sheaths glabrous, to 5 mm long, blades absent, or on some culms, 1-2 cm long, scabridulous; spikelets tawny or tawny-castaneous, ovoid, $10 \times 3-4$ mm, bluntly acute, solitary, erect; bracts shorter than spikelets, dilated at base, passing gradually into scales; scales obtusish, (fide Blake up to 3 mm long), puberulent distally, carinate but not strongly so, keel slightly excurrent into a short mucro; 1 nut broadly obovate, dull yellowish, another slightly narrower, with grayish interior showing through a translucent outer layer. Blake says "the nut is about 1.3-0.95 mm with epidermal cells in about 17 not quite regular rows".

This species has apparently only been found in the Society Islands since the original collection by the Forsters, by Nadeaud, whose no. 244, perhaps a collection number as well as the species number in his enumeration, was reported in 1873, not seen by me. He said it was common in marshes. I have not even enough information on this species as it occurs in Tahiti to properly characterize var. *junceae*. It seems to be another of the plants found by early collectors in the Society Islands that have disappeared since.

This species has given no problems in Tahiti, its type-locality. All writers have accepted it without mentioning variations or related taxa in Tahiti, itself, since almost no specimens from there are available. Slender unispicate forms from south and southeast Asia have been mentioned as similar, or even indistinguishable. Kunth (1837) says *F. polytrichoides* (Retz.) R. Br. is only weakly distinct. I have seen one Forster specimen, in GOET, which is not very adequate. Blake (1969) referred to a Forster Society Islands specimen in BM as "Type". I have studied this specimen, many years ago, and my notes are given above. Blake gave only a few lines of description of it. His indication of it as type may stand as an acceptable lectotypification, but at least three Forster specimens exist, in B, GOET and MW. St. John and I did not find it in 1934, but were not aware of it as something to be especially noted. In subsequent visits in 1973, 1981, 1983 and 1985, I did not find it though consciously looking for it.

In 1852-1857, Jardin collected extensively in the Marquesas and gathered a number of specimens of *Fimbristylis* which E.G. Steudel described as four new endemic species, two of which were published by Jardin after Steudel's death. These were later handled variously by several authors, ending with the late S.T. Blake in 1969, who, with some discussion, unceremoniously lumped them

together under *F. juncea*.

The problems arise with these four supposedly endemic and one other previously undescribed species from the Marquesas, which have been considered variously as the same, or all or one or more as distinct or as varieties.

My colleague, the late Dr. Marie-Hélène Sachet, working on the Marquesan flora, had on loan, the material of these species available in Paris, not including the several specimens studied by Blake, which had not yet been returned. Her colleagues, Dr. Bryce Decker and Dr. P. A. Schäfer, had made a number of collections of plants of this affinity also from the Marquesas, which have not been identified until now.

I studied the Paris specimens, before returning them, and compared them with the Decker and Schäfer material. My impression is that none of the Marquesan specimens are exactly the same as the Tahitian plant, so, even lacking adequate material from Tahiti, I have attempted an arrangement of the Marquesan taxa, which is given below. The entities, with one exception, are close together and close to *F. juncea*, sensu stricto, from Tahiti.

Possibly if more material were available from the Society Islands the situation would be more clear, but as it stands there seem to be at least four discernable taxa in the Marquesas, all of which are very close to *F. juncea*. They are separated by characters that are neither very conspicuous nor very constant. Their achenes are all very similar and similar also to Blake's description of the achene of the Forster plant at BM.

For the present the best disposition seems to recognize the four endemic Marquesan taxa as varieties of *F. juncea*, in order to direct attention to them and to stimulate further collecting. The fifth, previously unrecognized, entity is described below as *Fimbristylis sachetiana*.

Drake (1892) cites a collection by Mercier from the Marquesas under *F. juncea*, but gives no further information.

In his Flore de la Polynesie Francaise (1892, 1893, p. 242) he refers Steudel's *F. marquesana* and *F. tertia* to *F. juncea* var. *polytrichoides* and maintains *F. nukahivensis* with *F. separanda* as a synonym. In his Illustrationes Florae Insularum Maris Pacificis (1892, pp. 332-333) he places *F. nukahivensis* and *F. separanda* as synonyms of *F. ferruginea* Vahl. His var. *polytrichoides* is a transfer of *F. polytrichoides* (Retz.) Vahl (as R. Br. in Kunth) to *F. juncea*, to which it is related but not specifically identical. I do not agree with any of

these dispositions. He cites Dupetit-Thouars collections from the Marquesas which I have not seen, as well as the Jardin collections cited by me below.

Fimbristylis juncea* var. *separanda (Steud. ex Jardin) Fosberg, comb. nov.

Fimbristylis separanda Steud. ex Jardin, Mem. Soc. Sci. Nat. Cherb. 5: 36-7 (of reprint), 1857; Brown, Bishop Mus. Bull. 84: 102, 1931; Blake, Contr. Qld. Herb. 8: 10-12, 1969, as syn. of *F. juncea*.

Plant tufted, leaves mostly less than half length of culms, persistent basal sheaths usually dark reddish brown, puberulent to glabrous, blades at most 3-4 cm; bract usually shorter than spikelet, spikelets usually solitary (rarely a second pedicellate spikelet), broadly ovate-conic or broadly ovate, apically rounded to blunt or acutish, usually dull chestnut, base of spikelet or of upper persisting part broadly obtuse or subtruncate, scales nearly glabrous and glossy notably castaneous, somewhat striate, obtuse, very shortly mucronate, margin erose or ciliate, hyaline zone very narrow, midrib visible but not prominent, ending in a stout mucro which except in lowest scales does not exceed apex of scale; style strongly ciliate in upper third of entire portion, and well up on outer edges of the 2 branches; achene 0.75 mm long, obovoid, sides acute, surface gray-translucent, minutely trabeculate.

Marquesas: Nukuhiva: *Jardin 30 bis* (P, probable type, here designated as lectotype of *F. separanda* Steud. as it is labelled "Herbarium Steudel" though not the sheet designated as type by Blake, one of the following); "sans doute leg. *Jardin*" (P, 3 sheets); Taiohae Bay, 200 m, *Decker 2216* (US, BISH, POM, TI); "hauts plateaux", *Henry 3* (P). Hiva Oa: Sentier de Puamau a Hanaiapa, Eiaone, 210 m, *Schäfer 5891* (US); Uapou (as Ua Pu), 800-1000 m, *Quayle 1142* (BKL). Fatuhiva: Sentier d'Ouia, Makoe, N de la Crete qui ferme la vallee, d'Ouia, 650 m, *Schäfer 5812* (US); Omoa, crete de Pupuauihi, 670 m, *Schäfer 5786B* (US); Omoa, crete entre Vaitata et Otomahea, 170 m, *Schäfer 5732* (US); above Ui'a Valley, 150 m, *Decker 2597* (US, BISH, P); sentier d'Ouia, vallee d'ouia, 330 m, *Schäfer 5814* (US); Ouia, Ahoana, 330 m, *Schäfer 5827* (US); s.l., "*J.S.*" 1296 (BKL).

Fimbristylis juncea* var. *tertia (Steud. ex Jardin) Fosberg, comb. nov.

Fimbristylis tertia Steud. ex Jardin, Mem. Soc. Sci. Nat. Cherb. 5: 37, of reprint 1857; F. Brown, Bishop Mus. Bull. 84: 104, 1931; Blake, Contr. Qld. Herb. 8: 10-12, 1969, as syn. of *F. juncea*.

Generally small stature, tufted, leaves and culms filiform, very fine, glab-

rous or almost so, leaves usually at least half as long, up to 10 cm, sometimes equalling culms, spikelets ovoid, acute, tawny to dull castaneous, solitary (or in cymes of 3 ?), bracteate, bracts exceeding spikelets; scales few, ovate, apex rounded, mucronulate, very sparsely sericeous-puberulent distally.

Marquesas: Nukuhiva: *Jardin* s.n. (P); *Jardin* 30 (P, indicated as type by Blake, and here accepted as lectotype as it is labelled as from "Steudel Herbarium"). Uahuka: central ridge of Vaikive, Vaipae' e-Hane' trail, 430-450 m, *Decker* 1945 (US, BISH, POM). Tahuata I.: Vaitahu, crete de Amatea, 600 m, *Schäfer* 5525 (US). Fatuhiva: Omoa, crete de Pupuaihi, 670 m, *Schäfer* 5786 (US); above Ui'a Valley, 400 m, *Decker* 2600 (US, BISH). Hivaoa: Taaoa, Vaioma, *Schäfer* 5586 (US). This substerile specimen has unusually narrow spikelets and unusually mucronate scales.

***Fimbristylis juncea* var. *nukahivensis* (Steud.) Fosberg, comb. nov.**

Fimbristylis nukahivensis Steud. Syn. Pl. Ge. 2: 117, 1855 (as *nukahiwensis*); Drake, Fl. Poly. Fr. 242, 1892; Ill. Fl. Mar. Pac. 332, 333, 1892; Brown, Bishop Mus. Bull. 84: 102, 1931; Blake, Contr. Qld. Herb. 8: 10-12, 1969, as syn. of *F. juncea*.

Tufted plant with slender culms, about 30-45 cm tall; leaves mostly less than half as long as culms, sheaths puberulent, blades 0-10 cm long, linear-filiform, sparsely scaberulous; spikelets ovoid, quite acute, mostly in cymes of 3(-7), central spikelet sessile, lateral ones on slender peduncle-like branches, bracts subulate, not much longer or to twice as long as spikelets, spikelets ovoid, acute, 6 mm long but elongating in age to 12-14 mm, light tan to rust-color, pubescent toward base, or all the way up, scales broadly rounded distally, mucronate, marked with castaneous pencilling, erose, style bifid, ciliate well up onto branches, achenes obovoid, glossy, trabeculate, with 20-22 longitudinal ridges.

Marquesas: s. 1. *Jardin* (P); "haiki" "sans doute leg. *Jardin*" (P, 2 sheets). Nukuhiva: "Nukahiwa" [*Jardin* 30] (P, type designated by Blake, 1979); several sheets probably coll. *Jardin* (P); *Henry* 51 (P); herb. *Jardin* (P); "haiki" "sans doute leg. *Jardin*" (P). Mauu, 500 m, *F.B.H. & E.D.W. Brown* 716 (US); *Jardin* 19 (P) (cymes congested, unusually pubescent). Tahuata: Vaitahu, above Koaemaa, 150 m, *Schäfer & Oliver* 5116 (US); Vaitahu, est du village, 100 m, *Schäfer* 5433 (US); Vaitahu, crete d-Amatea, 550 m, *Schäfer* 5524 (US, BISH) (small and slender, spikelets plumper than usual, appr. var. *sep-*

aranda ?). Hivaoa: SW Paumau, Tahua'oa, 250 m, *Decker 987* (US, BISH, MO, P); SW Puamau, crest of buttress ridge, *Decker 968* or *698* (US, BISH, POM, NY); Terrahipapute, 2100 ft, *Adamson & Mumford 498* (BISH, NY); near Atocna, 2100 ft, *Pacific Entomological Survey EX 493* (BISH). Fatuhiva: Omoa, crête de Pupuauihi, 670 m, *Schäfer 5786* (US); Omoa, crête entre Vaitata et Otomahea, 170 m, *Schäfer 5732* (US); above Ui'a Valley, 150 m, *Decker 2597* (US, BISH, P); Sentier d'Ouia, vallée d'Ouia, 330 m, *Schäfer 5814* (US); Ouia, Ahoana, 330 m, *Schäfer 5827* (US); hills of Hana Vave, 700 ft, *Chapin 783* (NY) (perhaps distinguishable by minor characters).

Fimbristylis juncea* var. *marquesana (Steud.) Fosberg, comb. nov.

Fimbristylis marquesana Steud., Syn. Pl. Glum. 2: 107, 1855 (as *marquesana*); Brown, Bishop Mus Bull, 84: 104, 1931; Blake, Contr. Qld. Herb. 8: 10-12, 1969, as syn. of *F. juncea*.

Fimbristylis juncea var. *polytrichoides* sensu Drake, non (Retz.) Drake.

Plants tufted; culms very short to about 30-35 cm tall, about 1 mm thick, striate; leaves with sheaths minutely puberulent, glabrous at base, blades not more than 5-7(-8) cm long; spikelets about 1 cm long, ovoid, pointed or blunt, dull rust-color, ebracteate or with 1 or 2 bracts shorter than to exceeding length of spikelet, scales, at least lower ones, slightly puberulent to grayish pubescent, lower ones mucronate, upper ones tending to be erose or ciliolate, body of scale dull reddish, midrib prominent, margins light castaneous (from no. 546); stamens 2, anthers linear; style flat, bifid, margins strongly ciliate well up onto the strongly recurved branches; achenes suborbicular, 1.1-1.2 × 1 mm, white, trabeculate with 10-11 longitudinal ridges on a side.

Some material labelled *F. marquesana* may very well be *F. sachetiana* (vide infra).

Marquesas: s.l. *Herbier S.F.I.M 71* (P), resembles var. *separanda*, but spikelets not wide at base and scales are puberulent. Nukuhiva: s.l. *Jardin* from Steudel herbarium (P, designated type by Blake, 1969). Fatuhiva I.: trail bet. Omoa and Ui'a within 1 km from pass over central ridge, brink of precipice behind Ui'a Valley, 750 m, *Decker 2395* (US, BISH). Temuapuhiau Pass (above Quia Valley), 700 m, *Gagné 1225* (US). Tahuata I.: Vaitahu, vere la Crete d'Uvau, 510 m, *Schäfer 5467* (US). Mohotani: Memoei, *Adamson & Mumford 546* (BISH, NY).

Fimbristylis sachetiana Fosberg, sp. nov.

Planta caespitosa, culmis aphyllis, 1 mm crassis, spiculo solitario subnudenti ovato 1 cm longo acuto, glumis oblongis enervatis medio fulvidis marginibus late-hyalinibus, lobis bilobatis obtusis, stylo bifido ciliato; nucula suborbiculata, albida minute trabeculata.

A small tuft of erect leafless culms to 32 cm tall, 1 mm thick, sub-striate, sheath remnants glabrous, blades lacking; bract scarcely distinguishable from scales, or lacking; spikelet 1, ovate, not or scarcely inclined, bluntly acute, 10×3.5 mm; scales thin, broadly oblong, central part brownish, scarcely nerved, a pale median stripe not reaching the apex of the scale, hyaline margins broad, prolonged apically, bifid into 2 rounded lobes, lowest scale or bract scarcely margined, mucronate; style bifid, upper half strongly ciliate, cilia on lower third of outer margins of branches; achene suborbicular 1.2 mm long, white, lenticular, minutely trabeculate with 10-11 ridges or rows of cells on a side.

The Jardin sheet here described is labelled *Fimbristylis marquesana* Steud. but corresponds neither with Steudel's brief description quoted by Blake, including having a linear bract and strongly striate stem, nor with Blake's observation that the P sheet "from hb. Steudel", probably regarded by Blake as type, "carries three tufts of decidedly smaller plants with rather definitely pubescent glumes". The Jardin sheet on which *F. sachetiana* is based has one tuft plus a single culm, striate but only so under high magnification, and with glabrous glumes. Therefore I am regarding the other Jardin sheet mentioned by Blake as the type of *F. marquesana* but not formally lectotypifying it. *F. sachetiana* may be related to *F. juncea* and its varieties but perhaps resembles more closely *F. nutans* (Retz.) Vahl of south Asia, or even *F. ovata* (Burm. f.) Kern, but shows no tendency toward distichous florets. For the present it must be regarded as a Marquesan endemic of uncertain relationship, that has not been recollected.

Marquesas Islands: Nukuhiva, s.l. *Jardin* (P, holotype). Known only from the type specimen.

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1786年にソシエテ諸島から発見された *Fimbristylis juncea* の記載を、その lecto-type に基づいて補足する。また、マルケサズ諸島から記載された4固有種をこの *F. juncea* の変種とする。さらに、マルケサズ諸島から1新種 *F. sachetiana* を記載した。